



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/565,620	01/25/2006	Kunitake Matsushita	077135-0015	2328

1923 7590 02/17/2009
MCDERMOTT, WILL & EMERY LLP
Attn: IP Department
227 WEST MONROE STREET
SUITE 4400
CHICAGO, IL 60606-5096

EXAMINER

MULLINS, BURTON S

ART UNIT	PAPER NUMBER
----------	--------------

2834

MAIL DATE	DELIVERY MODE
-----------	---------------

02/17/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/565,620	Applicant(s) MATSUSHITA ET AL.	
	Examiner BURTON MULLINS	Art Unit 2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 2 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 2 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claims 1-2 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Recitation "...wherein the metal pipe is filled with the synthetic resin without reaching a distal end of the metal pipe and forming a recess" (claim 1) is indefinite because the combination of the passive voice ("the metal pipe is filled") and the infinite phrase "forming a recess" results in ambiguity, since it is not clear if the recess is included or excluded from the pipe. The phrase will be taken to mean ---wherein synthetic resin fills the metal pipe without reaching a distal end of the metal pipe and forms a recess---.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art in view of Larrabee (US 931,069). Applicant's admitted prior art (specification p.2:19-p.3:15; Fig.2) teaches a stepping motor 80 comprising: a stator assembly 94; a rotary shaft 81 including a lead screw portion end and a plain portion end (p.2:25-28, Fig.2), the plain portion end including the stator assembly 94 and the rotary shaft 81 having both ends thereof rotatably supported by respective bearings 88 & 90 (Fig.2); wherein the rotary shaft includes a metal pipe 82 having its inner and outer surfaces continuously covered by a synthetic resin 83 molded so as to form the lead screw portion 84 (p.2:18-28), wherein the metal pipe is

Art Unit: 2834

filled with the synthetic resin 83 (Fig.2) and [forms] a recess (not numbered, ball 86 positioned in distal end recess, Fig.2) ; a rotary magnet 85 fixedly mounted on the plain portion end of the rotary shaft, and rotatably housed in the stator assembly 94 (Fig.2); a bracket 87 attached to the stator assembly and having one bearing (pivot bearing) 90 at one end thereof (i.e., stator end; Fig.2); and a thrust mechanism (bearing) 88 disposed at the lead screw portion end of the rotary shaft opposite the stator assembly (i.e., on the distal end; Fig.2); and a point-contact member (ball) 86 provided on one bearing 88 of the respective bearings; the one bearing 88 rotatably supporting the rotary shaft positioned toward the lead screw portion end (i.e., the bearing 88 supports the distal/lead screw end of shaft; Fig.2); and wherein the diameter of the point-contact member (ball) 86 is less than an inner diameter of the metal pipe 82 such that the point-contact member is disposed on the distal end of the metal pipe (i.e., ball 86 in distal end recess, Fig.2).

Applicant's admitted prior art differs in that it does not teach that the metal pipe 82 is filled with the synthetic resin 83 "without reaching a distal end of the metal pipe"; and the thrust mechanism 88 does not further comprise "...a resilient member disposed within the distal end of the metal pipe..." such that the point-contact member 86 is between the resilient member and the bearing 88, "wherein the thrust force is provided by the resilient member to the rotary shaft in an axial direction."

Larrabee teaches a step bearing comprising at one end of a rotary shaft 2 and having a resilient (rubber) member 5 provided in a recess formed at the one end of the rotary shaft (Fig.1; p.1:53-61), and a point-contact member (ball) 12 is provided between the resilient member 5 and one bearing (seat disk) 10 of the step bearing, the one bearing rotatably supporting the rotary shaft 2 wherein the thrust force is given by the resilient member 5 to the rotary shaft 2 in an axial

Art Unit: 2834

direction (by virtue of the rubber member's resiliency). The resilient rubber member aides in the provision of a comparatively frictionless, durable and free-running bearing (p.1:15-23 & p.2:31-39).

It would have been obvious to modify applicant's admitted prior art motor lead-screw bearing structure and provide a resilient member in a recess of the shaft per Larrabee since this would have provided a comparatively frictionless, durable and free-running bearing. Further, providing Larrabee's resilient member on applicant's admitted prior art lead-screw metal pipe 82 would necessarily have meant the synthetic resin 83 in the pipe did not "[reach] a distal end of the metal pipe" because in Larrabee the hard rubber resilient member 5 is "inserted in a cavity formed in the end of the shaft" (Larrabee, p.1:53-57). In other words, the combination teaches a cavity formed in the end of the shaft such that the synthetic resin does not "[reach] a distal end of the metal pipe".

4. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art in view of Yano et al. (US 6,317,287). As described above, applicant's admitted prior art teaches all the elements of claim 1 but does not teach that the metal pipe 82 is filled with the synthetic resin 83 "without reaching a distal end of the metal pipe" or that the thrust mechanism 88 comprises "...a resilient member disposed within the distal end of the metal pipe..." such that the point-contact member 86 is between the resilient member and the bearing 88, "wherein the thrust force is provided by the resilient member to the rotary shaft in an axial direction."

Yano teaches a motor with a lead screw including a thrust bearing having a resilient member comprising a compression spring 9 provided in a recess 5c in the lead screw shaft 5

Art Unit: 2834

(Fig.8A), such that a point-contact member 30 is provided between the resilient member 9 and one bearing 32 of the respective bearings, wherein thrust force is given by the resilient member to the rotary shaft in an axial direction due to the inherent resilience of the spring 9. Yano's spring 9 preloads the lead screw, canceling backlash and preventing axial movement of the lead screw (abstract; c.1:25-28).

It would have been obvious to modify Ueno and provide a resilient member in the recess of the lead screw per Yano since the resilient member would have preloaded the lead screw, canceled backlash and prevented axial movement of the lead screw.

Regarding claim 2, Yano's resilient member is a coil spring 9. Further, while neither applicant's admitted prior art nor Yano teach a point-contact member made of steel, per se, the examiner takes official notice that this would have been obvious since steel is a well-known material for balls in bearings.

Response to Arguments

5. Applicant's arguments with respect to claims 1-2 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BURTON MULLINS whose telephone number is (571)272-2029. The examiner can normally be reached on 9-5. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Quyen Leung can be reached on

Art Unit: 2834

(571)272-8188. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BURTON MULLINS/
Primary Examiner, Art Unit 2834

bsm
18 February 2009